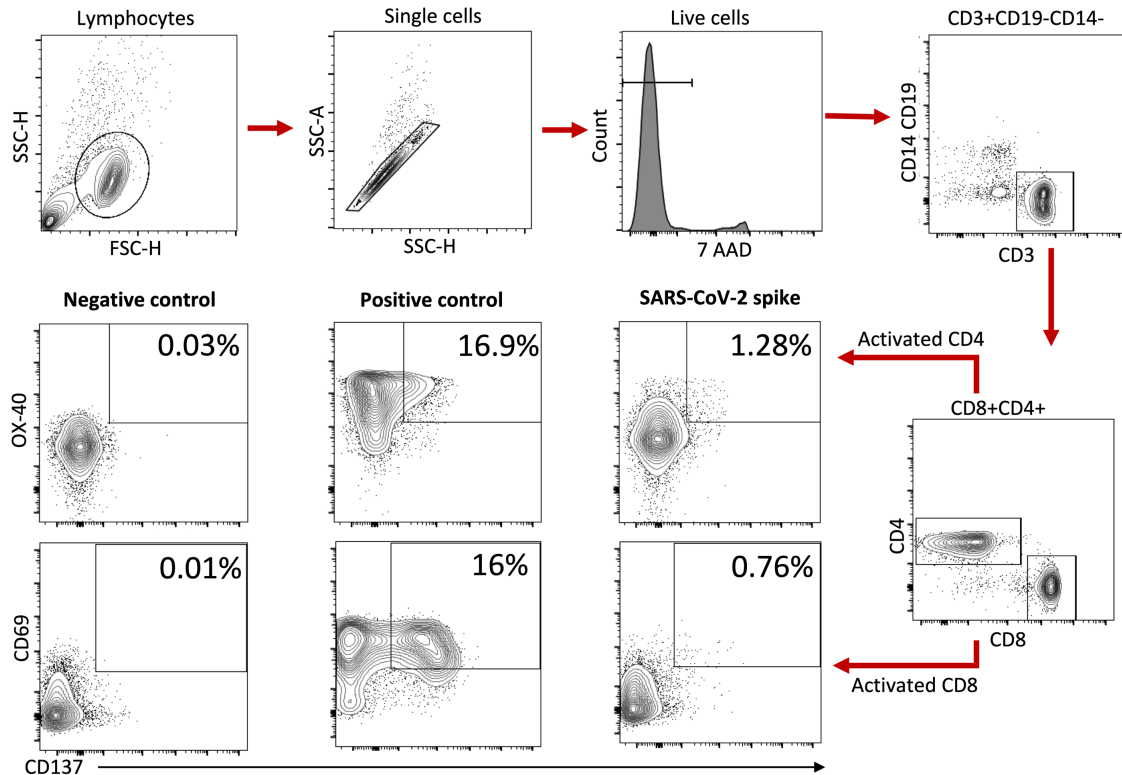
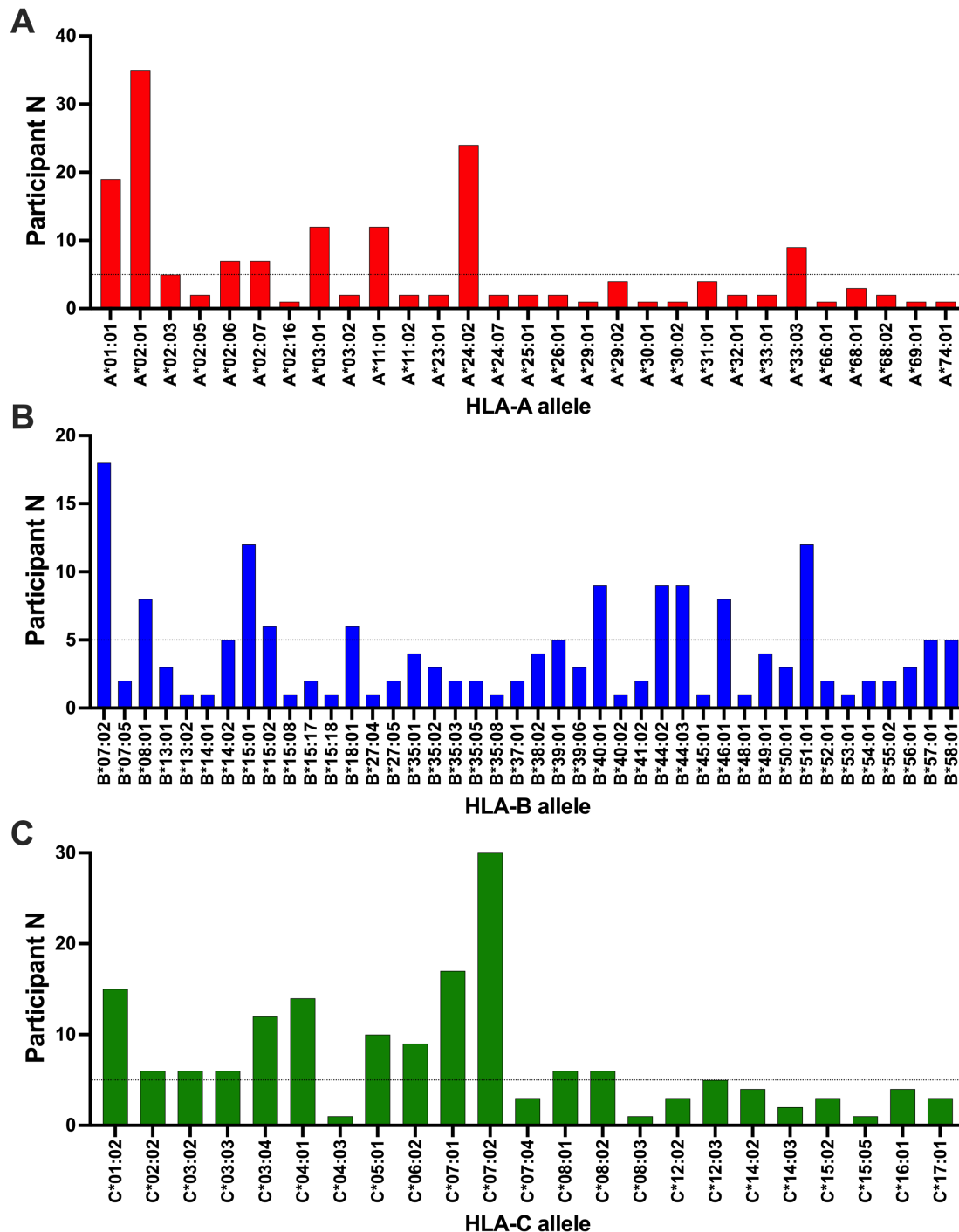


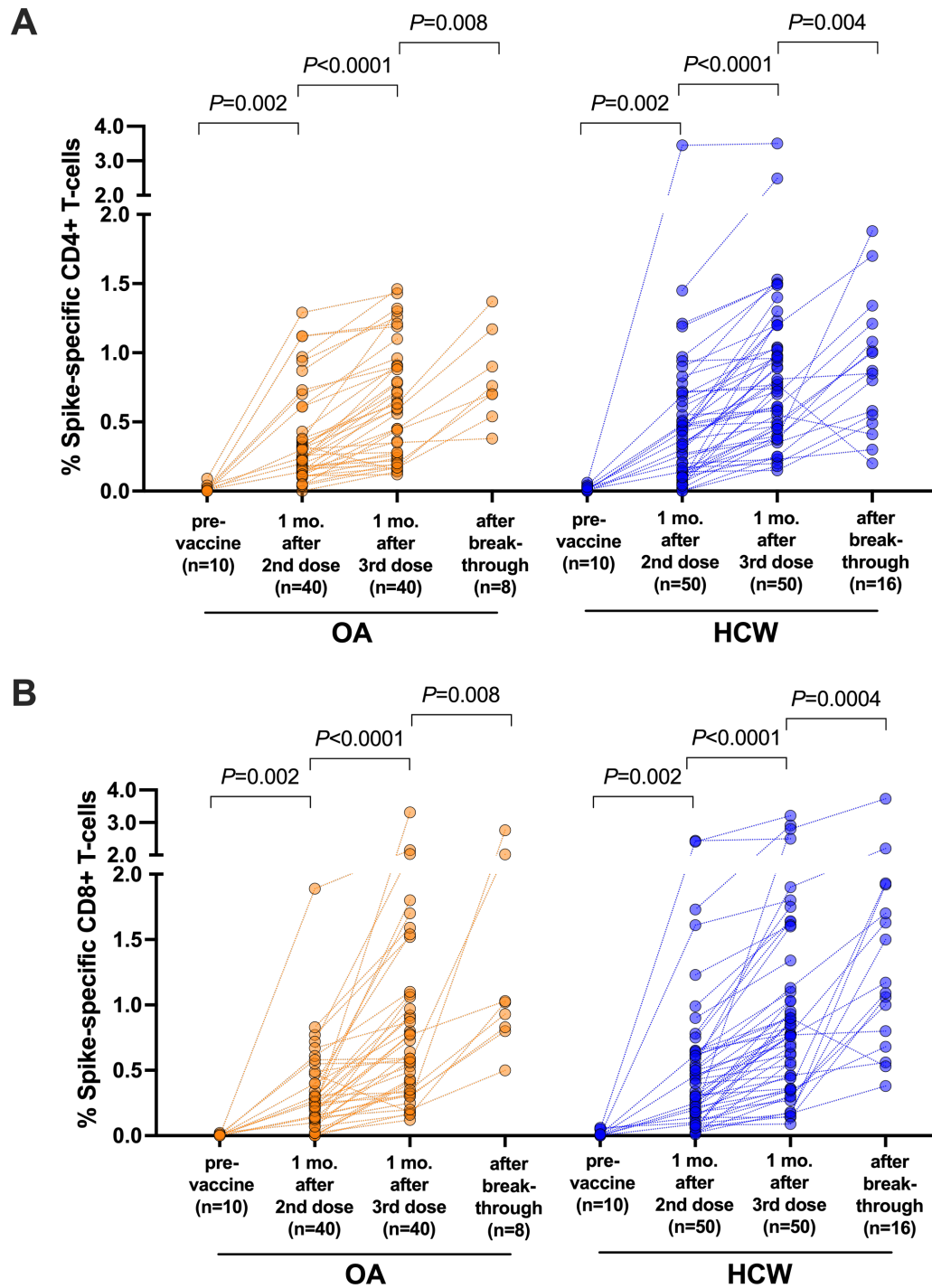
**SUPPLEMENTARY FIGURES**



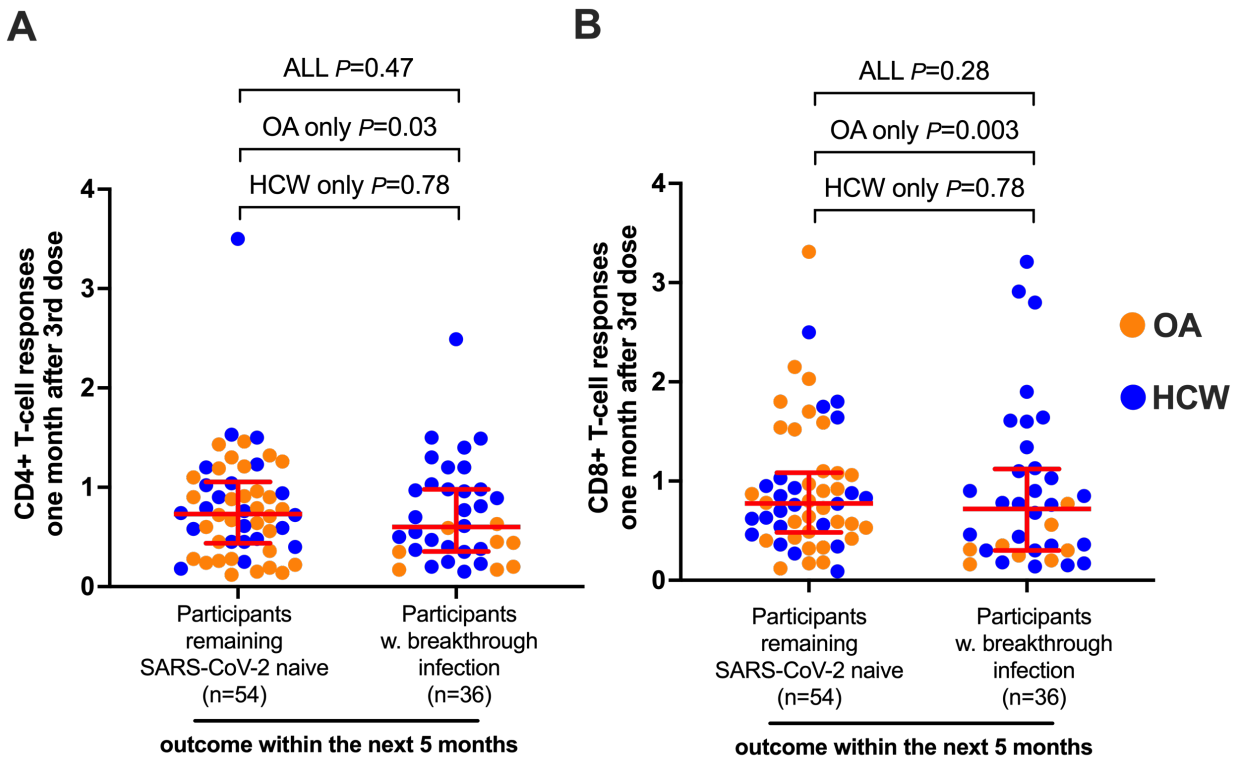
**Supplementary Figure 1. Gating strategy for quantification of SARS-CoV-2 Spike-specific CD4+ and CD8+ T-cells using an activation-induced marker assay.**



**Supplementary Figure 2. HLA-A, HLA-B, and HLA-C allele frequencies, reported as the number of participants expressing each allele in the overall cohort. Alleles observed a minimum of 5 times, shown by the dotted line, were assessed for their relationship with SARS-CoV-2 Spike-specific CD8<sup>+</sup> T-cell frequencies post-vaccination.**



**Supplementary Figure 3. Longitudinal view of SARS-CoV-2 Spike-specific T-cell frequencies before and after vaccination and subsequent breakthrough infection.** These are the same data as shown in Figure 1 but plotted longitudinally by participant. *Panel A:* CD4+ T-cell frequencies. *Panel B:* CD8+ T-cell frequencies. Older Adults (OA) are in orange; younger Health Care Workers (HCW) are in blue. *P*-values are calculated using the Wilcoxon matched pairs test.



**Supplementary Figure 4. SARS-CoV-2 Spike-specific T-cell frequencies prior to breakthrough infection.** T-cell frequencies induced by 3 vaccine doses are shown for study participants who remained uninfected (n=54) or who became infected (n=36) within 5 months post-vaccination. *Panel A:* CD4+ T-cell frequencies. *Panel B:* CD8+ T-cell frequencies. Older Adults (OA) are in orange; younger Health Care Workers (HCW) are in blue. *P*-values are calculated using the Wilcoxon matched pairs test.